

Amendments to the Claims

All amendments are made without prejudice or disclaimer.

1. (Currently Amended) A method for the preparation of a titanium oxide coating on an implant comprising the steps of:

a) forming a preparation comprising an organic solvent, an organometallic titanium oxide precursor and metal ions as metal salts and/or organometallic compounds, wherein the metal ions are dispersed homogeneously in the preparation ~~and exert an anti-microbial or antibacterial effect under physiological conditions~~, and further wherein the preparation is a sol in which the metal ions are homogeneously dispersed and dissolved;

b) applying the preparation prepared in a) onto an implant to form a coating;

c) drying the coating, wherein the metal ions in the coating exert an anti-microbial or antibacterial effect under physiological conditions.

2. (Withdrawn) The method according to claim 1 characterized in that after said step c) heating is conducted to 100 to 1000°C.

3. (Withdrawn) The method according to claim 1, characterized in that the implant is a metal, metal alloy, a glass, a ceramic, a plastic, a composite material, or a bone implant.

4. (Withdrawn, Currently Amended) The method according to claim 1 ~~one or more of the preceding claims~~ characterized in that said implant is a catheter, an osteosynthesis plate, an endoprosthesis, an external fixateur, an internal fixateur, a nail, a screw, a wire, a heart valve, an artificial blood vessel, a shunt, an implant for facial/plastic surgery, a middle ear implant, or a dental implant.

5. (Withdrawn) The method according to claim 3 characterized in that the implant is a metal or metal alloy selected from titanium, steel, iron, a steel alloy, an iron alloy, a titanium alloy, and a CoCr alloy.

6. (Withdrawn) The method according to claim 5 characterized in that the implant is a titanium alloy, a CoCr alloy or an osteosynthesis steel.

7. (Withdrawn) The method according to claim 3 characterized in that the implant is a plastic selected from polyethylene, polypropylene, polytetrafluoroethylene, polyethylene terephthalate, a polyamide, a polyurethane, a polysiloxane, a polysiloxane elastomer, a polyetherether ketone, a polysulfone, and a mixture thereof.

8. (Withdrawn) The method according to claim 1 characterized in that the organic solvent is selected from a linear or branched alcohol with a chain length of 2 to 8 carbon atoms, a cyclic hydrocarbon, an aromatic hydrocarbon, or a heteroaromatic hydrocarbon.

9. (Withdrawn) The method according to claim 1 characterized in that the organometallic titanium oxide precursor is fourfold coordinated titanium having linear or branched alkyl and/or alkenyl radicals bound by oxygen bridges wherein the alkyl and/or alkenyl radicals can have O and/or N atoms substituted or within the chain.

10. (Withdrawn, Currently Amended) The method according to ~~claim 1~~ claim 30 characterized in that the preparation comprises an acid selected from nitric acid, hydrochloric acid, sulphuric acid, phosphoric acid, an organic acid and a mixture thereof.

11. (Withdrawn) The method according to claim 1 characterized in that the metal ions are selected from zinc, mercury, vanadium, aluminium, titanium, chromium, cadmium, tin, lead, nickel, cobalt, calcium, magnesium, copper, zinc and silver ions, and a mixture thereof.

12. (Withdrawn, Currently Amended) The method according to ~~one or more of the preceding claims~~ claim 1 characterized in that the metal ion concentration in step a) is selected to give a metal ion concentration of 1-20% by weight in the coating.

13. (Withdrawn) The method according to claim 1 characterized in that step b) is carried out by dip coating, spin coating, blade coating, printing or spraying.

14. (Withdrawn) The method according to claim 1 characterized in that the preparation of step a) is applied in a coating thickness that the coating thickness of a single coating after drying and optionally heating is 50-1000 nm.

15. (Withdrawn, Currently Amended) The method according to claim 1 characterized in that ~~the preparation of step a) is applied in the form of a sol in which the metal ions are homogeneously dispersed and dissolved, wherein said sol transforms into a gel during or after step b).~~

16. (Withdrawn) The method according to claim 1 characterized in that the steps a)-c) of claim 1 are repeated one or more times to generate one or more additional titanium oxide coatings on the implant wherein each of the coatings can optionally be heated after step c) to 100 to 1000° C.

17. (Withdrawn) The method according to claim 16 characterized in that the metal ion concentration is varied in step a) to achieve different concentrations of metal ions in the original coating and the one or more additionally applied, dried and optionally heated coatings.

18. (Withdrawn) The method according to claim 17 characterized in that the metal ion concentration is varied in step a) to achieve concentrations of metal ions that decrease from the internal coatings close to the implant to the external coatings.

19. (Withdrawn) The method according to claim 1 characterized in that drying of the coating applied in step c) is performed under supercritical conditions.

20. (Withdrawn) The method according to claim 16 characterized in that the individually applied coatings contain different metal ions.

21. (Withdrawn) The method according to claim 16 characterized in that the metal ions are copper ions and/or silver ions.

22. (Previously Presented) An implant having a titanium oxide coating prepared according to claim 1.

23. (Previously Presented) The implant according to claim 22 characterized in that the metal ions contained in the coating can be dissolved out of the coating into the surrounding medium under physiological conditions.

24. (Withdrawn) The implant according to claim 22 characterized in that the layer thickness of a single titanium oxide coating is 50-1000 nm.

25. (Previously Presented) The implant according to claim 22 characterized in that the implant comprises a plurality of titanium oxide coating layers comprising metal ions homogeneously dispersed in each coating.

26. (Previously Presented) The implant according to claim 22 characterized in that the metal ions are contained in the titanium oxide coating in a concentration such that the coating initially has an antibacterial effect and later is biocompatible.

27. (Previously Presented) The implant according to claim 22 characterized in that the metal ion concentration in the titanium oxide coating is 1-20% by weight.

28. (Previously Presented) The implant according to claim 22 characterized in that the metal ions contained in the titanium oxide coating are copper ions, silver ions, or a mixture thereof.

29. (Currently Amended) A method of implanting a coated implant within a patient, comprising

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providing an ~~The use of the implant according to claim 22 for implantation into a patient;~~
and
implanting the implant within the body of the patient.

30. (Previously Presented) The method according to claim 1, wherein the preparation further comprises water and/or an acid.